CLAIMS

WE CLAIM:

1. A method for detecting the presence of quinolone resistant *E. coli* strains in a biological sample, comprising

(i) obtaining DNA from a biological sample;

(ii) optionally isolating DNA from the sample and/or amplifying the DNA contained in the sample with primers specific for a given target sequence;

(iii) contacting the DNA contained in the biological sample or obtained in step (ii) with a micro-array comprising at specific predetermined locations of the array two sets of capture probes, derived from the sequence of a gyrA gene of *E.coli*, comprising the sequence R_1-(X)-R_2, wherein

(a) X designates all permutations of the triplet at amino acid position 83 and 87 of the gyrA polypeptide of *E.coli*;

(b) R_1 and R_2 are sequences derived from the gyrA gene of *E.coli* adjacent to the triplet of either position 83 or 87 of the gyrA polypeptide and comprising of from about 5 to 20 nucleotides;

under conditions allowing hybridization of complementary strands; and

(iv) determining at which location on the array binding occurs,

wherein a change in the nucleic acid at at least one of said positions results in a change of an amino acid and is indicative of the development of a resistance against quinolones.

2. The method according to claim 1, wherein the change in the nucleic acid sequence results in an amino acid change of the gyrA polypeptide to leucine at position 83 and/or asparagine or tyrosine at position 87.

3. The method according to claim 1, wherein the sequences R_1 and R_2 are designed such that known nucleic acid changes at amino acid position 85 and 89 are considered.

4. The method according to claim 1, wherein the micro-array additionally comprises at specific predetermined locations of the array at least one additional set of capture probes,

derived from the sequence of a parC gene of *E.coli*, and selected from a nucleotide sequence comprising the sequence R_1-(Y)-R_2, wherein

(a) Y designates all permutations of the triplet at amino acid position 80, 84 or 87 of the parC polypeptide of *E.coli*;

(b) R_1 and R_2 are sequences derived from the parC gene of *E.coli* adjacent to the triplet of either position 83, 84 and 87 of the parC polypeptide and comprising of from about 5 to 20 nucleotides;

wherein a change in the nucleic acid at at least one position in the sequence results in a change of an amino acid and is indicative of the development of a resistance against quinolones.

5. The method according to claim 1, wherein the DNA obtained from a biological sample is amplified by means of PCR.

6. The method according to claim 5, wherein the DNA is fragmented prior to the contacting step.

7. The method according to claim 6, wherein the DNA is fragmented to pieces having a length of from about 10 to about 40 nucleotides.

8. The method according to claim 1, wherein the micro-array contains capture-probes as listed in table I.

9. The method according to claim 1, wherein the DNA is labeled prior to contacting it with the capture probes.

10. The method according to claim 9, wherein the label is selected from the group consisting of fluorescence label, colorimetric label, radioactive label, and an enzymatically detectable label.

11. A micro-array containing at specific predetermined locations of the array two sets of capture probes, derived from the sequence of a gyrA gene of *E.coli*, comprising the sequence R_1-(X)-R_2, wherein (a) X designates all permutations of the triplet at amino acid position 83 and 87 of the gyrA polypeptide of *E.coli* and (b) R_1 and R_2 are sequences derived from the gyrA gene of *E.coli* adjacent to the triplet of either position 83 or 87 of the gyrA polypeptide and comprising of from about 5 to 20 nucleotides.

12. The micro-array according to claim 11, further comprising at specific predetermined locations of the array at least one additional set of capture probes selected from a nucleotide sequence derived from the sequence of a parC gene of *E.coli*, and comprising the sequence R_1-(Y)-R_2, wherein (a) Y designates all permutations of the triplet at amino acid position 80, 84 or 87 of the parC polypeptide of *E.coli* and (b) R_1 and R_2 are sequences derived from the parC gene of *E.coli* adjacent to the triplet of either position 83, 84 or 87 of the parC polypeptide and comprising of from about 5 to 20 nucleotides.

13. A kit for detecting the presence of a quinolone resistant *E. coli* strain in a biological sample, containing a micro-array according to claim 11 and optionally buffers and reagents.